

INFLUENCE OF TEACHERS' ATTITUDE TOWARD THE SCHOOL  
LUNCH PROGRAM ON STUDENT PARTICIPATION

by

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## INTRODUCTION

Dietary practices established during childhood influence lifetime eating habits (1). The elementary school years are an opportune time to establish habits which lead to good nutrition; consequently, the elementary teacher can play a significant role in food habit formation.

Edwards (2) stated a working definition of an attitude as the degree of positive or negative feeling associated with some psychological object (symbol, phrase, program, person, institution, food, etc.) and whether a person likes or dislikes that particular object. During the elementary school years, children's attitudes generally are close approximations of the attitudes held by significant adults, including parents, teachers, and family group (3). Variations in children's attitudes reflect variations in the attitudes of their adult reference groups. The teacher is probably the first adult outside the family who plays a major role in the child's life, and may influence the child's attitude toward food. Baker (4) cited the negative influence a teacher's attitude had on the subsequent selection of a vegetable by her elementary age pupils.

School feeding programs are being viewed as increasingly important contributors to children's health and education. Approximately one-third of school age children have the opportunity, but choose not to participate in the school lunch program (5). Since the Type A lunch contributes to the nutritional well being of students, it is important to increase participation in the program. Several studies have been conducted to identify factors affecting student participation in the school lunch program; however, little information is available on attitudes of

teachers toward the school lunch program and the effect on student participation. Identifying teachers' attitudes toward the school lunch program will assist in the development of nutrition education programs. The objectives of this study were (a) to assess the attitudes of elementary school teachers toward the school lunch program and study the influence on student participation; (b) to consider other factors which could influence student participation: grade level, percentage of bussed students, percentage of students with working mothers, and percentage of students receiving reduced or free meals; and (c) to analyze if student participation could be predicted on the basis of teachers' attitude alone or in combination with other factors.

The review of literature includes the historical background and legislative developments of school foodservice, nutritional contribution of the school lunch, student participation in the school lunch program, the role of the elementary teacher in nutrition education, and measurement of attitudes.

## REVIEW OF LITERATURE

## Historical Background of the School Lunch Program

The School Lunch Program, as it exists today, has taken almost 200 years to develop. In the late 18th century, in Munich, Germany, an American born physicist and statesman, Benjamin Thompson, known as Count Rumford, combined a program of teaching and feeding hungry vagrant children (6). He established the Poor People's Institute, a program in which poor, unemployed adults were hired to make clothes for the Army in return for food and clothing. The food served to children and adults consisted mainly of soup made from potatoes, barley, and peas. Meat was too expensive and therefore not included (7). The objective of his program was to provide the best nutrition at the lowest possible cost (6).

In 1865, the French author, Victor Hugo, provided funds for hot meals for children in a nearby school. Six years later in Angers, France, the Society for People's Kitchens in Public Schools was established to furnish meals at school to children who were unable to pay (6). A two-cent charge was made to those children who could pay. School canteens in Paris in 1877, provided meals at public expense for children on the "poor board" list. Two years later the city council voted to support the program and canteens were set up in every school district. Teachers supervised the lunch program and were paid 25 cents a day for their services (6).

By royal decree in 1900, Holland became the first country to adopt national legislation to provide school lunches for children (7). In



Switzerland, lunches were provided to children in about 8 percent of primary schools by private societies to encourage attendance. An investigation in Switzerland indicated that teachers supported school feeding for children because of better attendance, improved attention, and better scholastic work. These findings resulted in a national order issued in 1903 for Swiss municipalities to provide food and clothing to children in need (6). In England, an attempt was made to provide meals at school for needy children with the passage of the Education (Provision of Meals) Act. This reflected Britain's concern over the physical condition of the populace because three out of every five men enlisting in the army during the Boer War were found to be physically unfit (7). By the early 1900's, school feeding had spread throughout most of the European countries (7).

School feeding in the United States underwent the same evolution as in Europe, beginning when nutritious meals were provided for children by private societies and charitable organizations. The Children's Aid Society of New York City is credited with initiating the first school feeding program in the United States. In 1853, this organization opened the first of its vocational schools for the poor and served free meals to all children who attended (8). Toward the turn of the century, significant efforts at school feeding were taking place almost simultaneously in other cities in the United States. In Philadelphia, the Starr Center Association began serving penny lunches in 1894 (6). The Women's School Alliance of Wisconsin provided lunches to children if both parents were working and there was great need. The price of the meal was one cent for those who could pay, and those who could not were given a free lunch. They were served all the soup and bread they could eat (7). In New York City, Dr. William H. Maxwell, Superintendent of Schools, pleaded that a

feeding program should be started, and in 1908, a three cent lunch was begun in two elementary schools to see if such a program could be self-supporting and still provide one-quarter of the daily food requirement (8). In Pennsylvania, in 1909, Dr. Cheesman A. Herrick, principal of William Penn High School for Girls, transferred the responsibilities for operations and support of the lunch program from charitable organizations to the Philadelphia School Board (6).

Two books published at the beginning of the 20th century focused public attention on the problem of malnourishment in the United States. The first, Poverty, by Robert Hunter, had a strong influence upon the United States effort to feed hungry, needy children in school. It pointed out the existence of poverty and turned the spotlight on its social and economic effects. The second, The Bitter Cry of the Children, had a similar theme and pointed out how Europe had attacked malnutrition through feeding programs (8).

By 1913, there were school lunch programs in 30 cities in 14 states. Most of these programs were operated by volunteer parent groups and interested civic organizations, but many educators believed lunch at school should be an educational experience, and a trend was developing toward operation of the program by the school authorities (8).

#### Legislative Developments

The National School Lunch Act was signed into law by the 79th Congress on June 4, 1946 (9). The objectives of this Act are stated in Section 2 as follows:

It is hereby declared to be the policy of Congress, as a measure of national security, to safeguard the health and well-being of the Nation's children and to encourage the domestic consumption

of nutritious agricultural commodities and other food, by assisting the states through grants-in-aid and other means in providing an adequate supply of food and other facilities for the establishment, maintenance, operation and expansion of nonprofit school lunch programs (9).

The basis and motivation for the National School Lunch Act evolved from the severe economic and agricultural crisis of the thirties (10). In the early forties thousands of young men were rejected during World War II, as they had been during World War I, for physical deficiencies related to malnutrition.

The authors of the Act recognized that teaching children the relationship between food and health, as well as providing meals, was necessary to accomplish the purpose of safeguarding the health and well-being of the nation's children. The original bill included a section to provide for nutrition education and training. Because of an ensuing battle between the Department of Agriculture and the Office of Education regarding who should be responsible for nutrition education, however, the Senate decided to omit the education and training component of the bill rather than lose the entire nutrition package (10). Once eliminated the issue was lost for almost thirty years.

Few changes occurred in the basic structure of school nutrition programs between 1946 and 1966. In 1966, to strengthen and expand the foodservice programs for children, the 89th Congress enacted the Child Nutrition Act (11). Under this legislation, a pilot breakfast program was authorized and extended to reach preschool and poor children in non-school group situations in the summer. In addition, the Special Milk Program, in operation since 1954, was incorporated into the Child Nutrition Act.

Since the Type A pattern was introduced in 1946, a number of minor changes have taken place. Public Law 94-105 (12), enacted in October, 1975, was designed to reduce plate waste and enabled senior high school students to choose less than the complete Type A lunch. A student could choose a minimum of three of the five Type A lunch items and the lunch would still be priced as a unit. As a result of current nutritional knowledge indicating possible undesirable effects of excess fat in the diet, the requirement of offering butter or fortified margarine also was eliminated by Public Law 94-105.

The most recent legislation concerning nutrition education, occurred in November, 1977, when President Carter signed Public Law 95-166 into law (13). This legislation provides for a nutrition education and information program, similar to the nutrition education and training component that was removed from the original school lunch bill in 1946. Grants to states will provide for: (a) nutritional training of educational and foodservice personnel, (b) foodservice management training of school foodservice personnel, and (c) nutrition education activities in schools and child care institutions. The goal of this program is to provide children with better learning opportunities regarding nutrition and food, the relationship of nutrition to health, and experiences to use this knowledge to develop positive nutrition and food attitudes necessary to their health and well-being throughout life (14).

The program will be implemented in two phases. The first phase initiates the start-up of the program by the education agency in each state and involves four major steps. The first is the approval of a written agreement between the United States Department of Agriculture (USDA) and the state agency under which the state will conduct a

nutrition education and training program in accordance with pertinent regulations and guidelines. The second step involves the advance funding to the state agency to employ a nutrition training coordinator. The third is the employment of a nutrition education and training coordinator by the state agency, and the fourth step involves the advancement of funds to the state agency for the second phase of the program.

The second phase of the 1977 law involves three aspects. The first is the conduct of the nutrition education and training needs assessment. This is a systematic process for delineating the scope, extent (quantity), reach, and success of any current nutrition education activities including those relating to: (a) methods and materials available inside and outside the classroom; (b) training of teachers in principles of nutrition and in nutrition education strategies, methods, and techniques; (c) training school foodservice personnel in the principles and practices of foodservice management; and (d) compilation of existing data relative to factors impacting on nutrition education and training such as statistics on child health and competency levels achieved by foodservice personnel. The second aspect is the development and submission of a state plan for nutrition education and training. The third aspect is the implementation of the state approved plan (14).

#### Nutritional Contribution

The schools' goal is to develop the full educational potential of every child. Callahan (15) stated that one basic requisite for optimum educational achievement, that of good health, is often ignored, pushed to the background, or even forgotten altogether.

The objective of the school lunch program is to serve attractive, nutritionally adequate, and moderately priced lunches (16). The Type A lunch is designed to provide at least one-third of the Recommended Dietary Allowances (RDA) of the National Research Council for a child ten to 12 years of age (16). School feeding programs are being viewed as increasingly important contributors to children's health and education. Emmons et al. (17) reported that for a child eating five school lunches a week, 24 percent of his or her food intake is provided by the school.

A statewide nutrition survey of 80,000 Massachusetts school children was conducted in an attempt to answer two questions: (a) do the nutritional benefits of the school lunch program justify the money spent to maintain the program, and (b) do children buying the Type A meal obtain a more nutritious lunch (5). Of the students buying the Type A lunch on the day surveyed, three-fourths of those students consumed a satisfactory lunch, while only one-third of the remaining students who bought a la carte items, brought bag lunches, purchased lunch at a neighborhood store, or went home for lunch, ate an adequate meal.

The nutritional contribution of the school lunch has been evaluated in many studies. A study conducted in upstate New York showed that children participating in the school lunch program had significantly higher intakes of protein, calcium, vitamin A, thiamine, riboflavin, niacin, and ascorbic acid than did children bringing lunches from home (17).

In a North Carolina study, meals from 23 lunch lines were analyzed for protein, fat, calories, vitamin A, ascorbic acid, thiamine, riboflavin, iron, and calcium. Based on the Type A goal of one-third of the

RDA, lunches were adequate in all nutrients except calories, ascorbic acid, and iron (18).

In 1966, nationwide studies were conducted to obtain data on the nutrient content of school lunches (19-22). Type A lunches served to sixth graders were collected from 300 schools in 19 states. Murphy et al. (19) found that of the six major minerals only magnesium was low for boys, while magnesium and iron were low for girls. They reported that values for trace minerals were adequate except for chromium, copper, and cadmium which were marginal or low (20). Murphy et al. (21) indicated that adequate amounts of vitamins usually are provided and often exceed the nutritional goal of one-third of the RDA when lunches are based on the Type A pattern. Vitamins most often found to have low values were vitamin A, vitamin D, vitamin B<sub>6</sub>, and thiamine. Lunches contained approximately 32 grams of fat which provided 39 percent of the calories (22).

#### Student Participation in the School Lunch Program

Heimstra (23) reported that 57 percent of students participated in the school lunch program in 1976. Since the Type A lunch contributes to the nutritional well being of students, it is important to increase participation in the program. Several studies have been conducted to identify factors affecting student participation in the school lunch program. Low participation has been shown to be related to dislike of menu items served, long lunch lines, little time for eating, poor lunchroom environment, and the indifferent or negative attitudes of faculty and administration (15, 24, 25).

The USDA Food and Nutrition Service, in cooperation with state and local lunch directors, conducted a study of foodservice in secondary schools to determine those factors that influence participation (26). Twenty schools throughout the country, ten high participation schools (over 80% of the average daily attendance) and ten low participation schools (under 20% of the average daily attendance), were selected for the study. Results indicated that attitudes toward the National School Lunch Program were found to have an effect on participation. In all high participation schools the administrators, teachers, and workers had positive attitudes. Low participation was often a result of poor communication or negative attitudes toward the program. Factors found in low participation schools were similar to those mentioned above, while the successful programs were characterized by good facilities, merchandising the Type A lunch, and limited a la carte choices.

Throughout the country elementary and secondary schools have implemented a variety of programs in an attempt to increase participation. New service methods including buffet and self service, salad-soup-sandwich bars, and fast food styles have decreased platewaste and increased participation (27-32).

As indicated in the USDA study, merchandising the school lunch may increase student participation (26). Techniques used to merchandise include using imaginative menu terms, planning menus that appeal to students, using creative packaging, and improving the cafeteria atmosphere (33). Methods reported to improve the cafeteria atmosphere include changing seating patterns, having attractions such as jazz bands and folk groups, and operating the foodservice as a restaurant (33-35).



The Rainbow Lunch is a merchandising program developed by ARA, a contract management company, to increase participation in secondary schools (36). Four colors were chosen to represent the four main parts of the Type A lunch. If the student selects one item from each color group, requirements of the Type A lunch are met and only the price of the Type A lunch is paid. If the student chooses not to take an item from each group, higher a la carte prices are paid. Crimmins contended that the success of this program was due to effective public relations, advertising, and student-faculty involvement. Other methods reported to increase participation in elementary and/or secondary schools are: student involvement with menu planning, providing choices within the Type A pattern, using foodservice advisory committees, kindergarten field trips into the cafeteria, and weekly newspapers that contain menus, participation reports, and contests (37-41).

#### The Role of the Elementary School Teacher in Nutrition Education

Good nutrition is the basis for good health. According to Stare, it is not possible to separate nutrition from health (15). Good health involves the physical, mental, and social well being of the individual.

Dietary practices established during childhood influence lifetime eating habits (1). The elementary years are an opportune time to establish habits which lead to good nutrition, and schools have access to children at these early ages while food habits can still be molded (42). Consequently, the elementary teacher plays a significant role in food habit formation.

Peterson and Kies (1) asserted that the establishment of good food habits needs to be the prime goal of a nutrition education program. The White House Conference on Food, Nutrition and Health in 1969 (43), stated, "The objective of nutrition education is to promote optimum health through food and thus contribute to an individual's potential for achieving his life goals." Callahan (15) contended that children must have the knowledge and wisdom to select and eat the foods necessary for good health and that this only could come through nutrition education. Sodowsky (44) stressed that the earlier in the child's life that nutrition education can be implemented to promote positive health practices, the more likely it is that the child will be able to realize full potential for a creative life of freedom and dignity. It has been suggested that a comprehensive and sequential program of nutrition education be included as an integral part of a school's curriculum beginning in the early elementary years. This program needs to coordinate the school lunch with educational programs occurring in the classroom (45-47).

Sodowsky (44) stated that nutrition education, particularly for elementary school children, is one of the challenging responsibilities of the teacher. The School Health Education Study conducted in 1964 (48) indicated that the classroom teacher is responsible for the major portion of nutrition education. Therefore, it is important that the education of teachers includes subject matter knowledge of nutrition education. Semrow (49) contended that the teacher teaches best those subjects about which he/she has the most confidence and security, i.e., subjects studied thoroughly and believed in strongly. Because of emotional overtones in food and nutrition, teachers need to understand that nutrition is a science and need to learn nutrition facts so they develop positive

attitudes toward nutrition and avoid the pitfall of teaching nutrition opinions rather than facts (49-50).

Results of a five month nutrition education program in North Carolina (51) pointed out that when an individual teacher was committed to nutrition, greater success occurred than when the teacher believed he/she was forced into teaching nutrition. Results of a nutrition education workshop for elementary teachers indicated that when teachers emphasized nutrition in the classroom, students became a positive influence on their families' food consumption at home (44).

Innovative programs need to be developed to integrate nutrition into classroom teaching. The soup-salad bar, a "create your own" Type A lunch, was developed as an innovative approach to nutrition education (32). Roepke reported that by changing attitudes, this approach brought support for nutrition education in three Kansas secondary schools.

#### Measurement of Attitudes

Many definitions for attitude have been proposed. Edwards (3) stated a working definition of an attitude as the degree of positive or negative feeling associated with some psychological object (symbol, phrase, program, person, institution, food, etc.) and whether a person likes or dislikes that particular object. An individual's attitude is inferred from his behavior and cannot be measured directly as can skills, facts, and concepts. Four areas of substantial agreement concerning attitudes are:

- (a) an attitude is a predisposition to respond to an object rather than the actual behavior toward such object,
- (b) an attitude is persistent over time,

- (c) an attitude produces consistency in behavior, and
- (d) an attitude has a directional or motivational quality (52).

Two widely accepted and important facts about attitudes are: (a) the actions of individuals are governed to a large extent by their attitudes; and (b) an attitude is a system of three interrelated components, a cognitive component, an affective component, and an action-tendency component (53). It also generally is agreed that aspects of the individual and the group are important determinants of the acquisition and development of attitudes (3). The most crucial cognitive component of an attitude is factual information. The affective component represents the emotions one associates with the attitude object. Regardless of how an attitude is acquired, it guides behavior in a consistent way, the action-tendency component of the attitude. If an individual holds an unfavorable attitude toward a given attitude object, he/she will react consistently in a way that is negative toward the object; if an individual holds a favorable attitude, he/she will react consistently in a way that is supportive of that object (3).

Three major methods for studying attitudes are: observation, self-report, and projective techniques; of these, self-report techniques are most frequently used (53). Carruth and Anderson (54) stated that a simple and effective self-report method of measuring attitudes is by using a Likert-type scale because of the ease of responding and the familiarity of the categories. Summers (52) found that the Likert technique also has the advantage of providing for the operation of an intensity factor. Scoring is influenced by the degree as well as direction of response to each item; hence, intensity of the judgment weighs in the final score. When using a Likert-type scale, a person is presented

with a list of statements with responses embodying varying degrees of positive and negative feelings, and is asked to indicate agreement or disagreement with each in the form of the rating scale. When using the Likert-type instrument and scoring method, two important and basic assumptions about the measurement are made: (a) the strength of agreement or disagreement is proportional to the person's attitude, and (b) all statements occupy some relative position on the scale or its opposite position on the continuum (2).

During the elementary school years, Klausmeier and Ripple (3) stated that children's attitudes generally are close approximations of the attitudes held by significant adults, including parents, teachers, and family group. Variations in children's attitudes reflect variations in the attitudes of their adult reference groups. Although school-related attitudes of children may change during the elementary years, they generally reflect the attitudes of significant adults.

The teacher is probably the first adult outside the family who plays a major role in the child's life (55). Of the situational factors affecting the child's adjustment and progress within the school setting, probably none is as important as the teacher-pupil relationship. Children's attitudes toward food may be influenced by the attitudes of their teachers. Lowenberg (56) stated that attitudes toward such foods as vegetables are transmitted by those who guide children at meals. The adult's attitude toward vegetables is often more influential with children than words. Baker (4) cited the negative influence a teacher's attitude had on the subsequent selection of a vegetable by her elementary age pupils.

According to Garvue et al. (57) teachers and school administrators have too frequently been negative and thereby handicapped nutrition education program development because they did not fully understand the values, needs, and potential benefits of an adequate nutrition education program. Garvue cited the following as an example of a fairly common attitude among teachers and administrators, "Schools should stick to instruction and let parents feed their kids." Peterson and Kies (1) contended that negative attitudes of a minority of the teachers could have an adverse effect on the attitudes of young children toward the school lunch program.

A Nebraska study (24) on nutrition knowledge and attitudes of elementary teachers indicated that behavioral change of teachers was based more on attitudes rather than on knowledge. Since it has been shown that knowledge of nutrition is ineffective in changing behavioral practices of food consumption, it may be that attitudes are far more important (1). If attitudes are an important factor in changing food consumption patterns, Peterson and Kies stressed that traditional methods of nutrition education for classroom teachers must be revamped.

## METHODOLOGY

### Research Site

The study was conducted at seven of eight elementary schools in a medium-sized midwestern city; one school was omitted because of its atypical size. Table 1 provides general information about all schools included in the study. In addition to the elementary schools, the district consists of one senior high and one junior high school.

All of the elementary schools had an "open campus" policy; i.e., students were allowed to leave campus during the lunch period. All school lunch periods were approximately 25 minutes.

### Phase I: Data Collection from Teachers

Phase I of the study assessed teachers' attitudes toward the school lunch program. Approval for the study was obtained from the district foodservice director, district director of elementary education, and the elementary school principals. Periodic consultation with the district foodservice director occurred throughout the study.

### Research Instrument

The attitude instrument consisted of three parts: Section I requested biographical information; Section II consisted of 53 statements with Likert-type responses that investigated teachers' attitudes toward the school lunch program; and Section III included two multi-part Likert-type statements (Appendix A). The Likert-type format was selected for several reasons: (a) ease of responding, (b) familiarity of categories, and

Table 1 General information about schools

School	Student Enrollment	Teachers (N)	On-site or Satellite <sup>1</sup>
1	225	9	Satellite
2	240	10	Satellite
3	360	12	On site
4	567	21	Satellite
5	569	19	On site
6	387	14	Satellite
7	338	13	On site

<sup>1</sup>On site = production of food at the school

Satellite = food transported from another school



(c) operation of an intensity factor. Statements were based on a literature review of attitude instruments and studies reporting factors influencing participation in the school lunch program (1, 58-62). The first draft of the questionnaire was reviewed by graduate students and members of the graduate faculty in the Department of Dietetics, Restaurant and Institutional Management at Kansas State University. Revisions were made based on their comments. The second draft of the questionnaire was again reviewed by the initial review group, a statistician, the district director of elementary education, and the district foodservice director. The third draft incorporated the additional suggestions and was pilot tested by elementary teachers in a school not included in the study.

After administering the pilot study instrument, the response format for the 53 statements in Section II was changed. The original attitude statements used a Likert-type format with a five category continuum from "strongly agree" to "strongly disagree" with a "no opinion" response at mid-point. To eliminate the large number of "no opinion" responses, the teachers suggested omitting this category, resulting in a forced-choice scale. Thus, a four category continuum from "strongly agree" to "strongly disagree" resulted.

Using additional recommendations from the pilot test, the final instrument was developed. Information requested included biographical data, enrollment in class, number of students bussed, number of students with working mothers, and statements designed to assess teachers' attitudes toward the school lunch program. Content validation for the attitude instrument involved a five step process: (a) review of relevant studies, (b) modification of questions from other studies, (c) input from selected professionals, (d) input from experts in the field, and (e) a

pilot test with a school not in the study. The instrument was submitted to and approved by the Human Subjects Committee at Kansas State University.

#### Distribution of the Research Instrument

The attitude instrument was mailed to 98 elementary teachers during the fall semester, 1978. The sample included all first through sixth grade school teachers in the school district, excluding only those who taught in the school used for the pilot study. Enclosed with each attitude instrument was a cover letter (Appendix B) signed by the foodservice director explaining that the study was being conducted as part of a needs assessment fulfilling one of the requirements of Public Law 95-166. A stamped, self-addressed envelope to facilitate return of the questionnaire was included in the mailing. As a result of the first mailing, the researcher received 64 completed instruments (65%).

Two weeks after the initial mailing, a follow-up letter (Appendix B) and duplicate attitude instrument were sent to non-respondents. This mailing resulted in 19 returned instruments for a total of 83 returns or 85 percent.

#### Phase II: Collection of Student Participation Data<sup>1</sup>

Phase II of the study involved the collection of student participation data by class at each school by the lunchroom cashier. Data were collected for a one week period in the fall of 1978.

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<sup>1</sup>Participation in the school lunch program is defined as the number of persons who select the Type A school lunch.

The form used to collect participation data was a modified version of other participation records being used in the foodservice (Appendix C). The initial form was reviewed by the district foodservice director, and the final form was developed based on her comments. Information collected included: teacher grade, daily class attendance, total meals served, number of free meals served, and number of reduced meals served.

The participation form was pre-tested by all school cashiers two weeks prior to actual data collection. Cashiers commented that the form required extra time, but no major revisions were needed.

### Data Analysis

Frequency distributions, means, and standard deviations were compiled for each biographical variable and for responses to attitude statements. Analysis of variance was used to compare mean scores on attitude items among teachers grouped by school. The least significant difference procedure was the multiple range test used (63).

The 83 elementary classes were divided into two grade levels (lower, grades 1-4; and upper, grades 5-6); and into three groups on the basis of participation rate:

- (a) High participation (top one-third), 80 percent and above, N = 26;
- (b) Medium participation (middle one-third), 67-70 percent, N = 31; and
- (c) Low participation (bottom one-third), 66 percent and lower, N = 26.

Two-way analyses of covariance were computed to determine if there were any statistically significant differences in the adjusted average responses on attitude items among teachers defined by the three

participation levels and two grade levels, when percentage of students bussed ( $X_1$ ), percentage of students with working mothers ( $X_2$ ), and percentage of students receiving free and reduced meals ( $X_3$ ) were controlled (64). The analysis was repeated for each of the 53 statements in Section II of the instrument.

To determine if the participation rate could be predicted on the basis of teachers' attitude alone, or in combination with control variables defined above ( $X_1$ ,  $X_2$ , and  $X_3$ ), multiple regression was used with participation rate as the dependent variable (65). A five-day average lunch participation (total number of students eating the Type A lunch in relation to daily attendance) was computed for this analysis. Because of the large number of attitude items, attitude scales were developed as discussed below for use in this analysis. Two stepwise multiple regression analyses were computed:

- (a) first, using only the attitude scale scores as independent variables, then
- (b) using attitude scale scores and control variables ( $X_1$ ,  $X_2$ , and  $X_3$ ) as independent variables.

The 53 attitude statements in Section II of the instrument were classified by a committee of faculty members and graduate students, Department of Dietetics, Restaurant and Institutional Management at Kansas State University, into 13 categories as follows: (a) teachers' attitude toward the school lunch program, (b) teachers' attitude toward eating with class, (c) nutrition education, (d) merchandising the school lunch, (e) lunchroom environment, (f) making improvements in the lunchroom environment, (g) platewaste in the school lunch program, (h) food quality, (i) teachers' meal, (j) students' meal, (k) length of lunch, (l) school foodservice employees, and (m) free and reduced price lunches. All

statements were classified by each member of the committee independently into one of the 13 categories; when there was disagreement, statements were discussed and categorized by group consensus. Items in Section III, number 1 (a-l) and number 2 (a-h), were incorporated into two additional categories. The categories were used for classifying the data for purposes of discussion of the item findings and for developing scales. All statements were then reviewed by the same committee to weight responses for calculation of attitude scale scores for use in further analyses. Direction was adjusted so the response that indicated the most positive attitude was weighted 4, and the least positive, 1. Scores for attitude scales were computed by averaging weights of items comprising each category (Appendix D).

Coefficient alpha was used to determine the reliability of the 14 scales and the scale developed from item 1 in Section III (Table 2). Coefficient alpha provides a standard method for estimating the reliability of attitude scales that contain no "right" or "wrong" answers but assess degree of agreement. It is based on internal consistency among the items composing a scale. Of the 14 scales, ten had a coefficient alpha of .50 which was considered the minimum acceptable level (66). Three scales were modified by deleting one item in each scale to increase reliability.

Table 2 Reliability of scales constructed from attitude items

Scales	Item No.	Coefficient Alpha	
		Initial	Modified
I. <u>Teachers' attitude toward school lunch program</u>	2,28	.63	
II. <u>Teachers' attitude toward eating with class</u>	5,45,53	.79	
III. <u>Nutrition education</u>	6 <sup>1</sup> ,10,14, 24,39,47, 52	.44	.52
IV. <u>Merchandising the school lunch</u>	20,21,22 25,43,48	.11 <sup>2</sup>	
V. <u>Lunchroom environment</u>	19,23,42	.66	
VI. <u>Making improvements in lunchroom environment</u>	17,29,51	.29 <sup>2</sup>	
VII. <u>Plate waste in school lunch program</u>	1,26,34, 37,50	.11 <sup>2</sup>	
VIII. <u>Food quality</u>	13 <sup>1</sup> ,16,27, 33,35,46	.61	.77
IX. <u>Teachers' meal</u>	4,9,12,31	.54	
X. <u>Students' meal</u>	18,32,40, 41,44	.65	
XI. <u>Length of lunch</u>	8 <sup>1</sup> ,15,30, 38,49	.23	.54
XII. <u>School foodservice employees</u>	7,36	.59	
XIII. <u>Free and reduced price lunches</u>	3,11	.29 <sup>2</sup>	
XIV. <u>Benefits to students</u>	III 1 a-k	.56	

<sup>1</sup>Items omitted to increase reliability

<sup>2</sup>Scale omitted from multiple regression analysis because of low reliability

## RESULTS AND DISCUSSION

### General Information

Eighty-three elementary teachers completed the attitude instrument. A large majority of the respondents were between 26 and 50 years of age, had taught from six to 20 years, and had been employed in their present positions one to ten years (Table 3). About two-thirds of the respondents had children and of these children, 40 percent were currently enrolled in elementary school. Approximately one-fourth of the teachers ate school lunch once a week or more, but the largest percentage of respondents ate only once a month or never participated in the school lunch program.

As shown in Table 4, class size ranged from 14-33 students, with about half of the classes averaging 21-25 students. In approximately one-fourth of the classes, less than 10 percent of the students were bussed. Only 18 percent of the classes had over 70 percent of the students bussed. In approximately 80 percent of the classes, 40 percent or more of the students had mothers who were employed outside the home, reflecting the national trend of increased numbers of women in the work force (67). Only 2.4 percent of the classes had less than one-third of the mothers employed.

Overall, in Manhattan, participation in the elementary schools was 71.9 percent which was high in relation to the national average of 57 percent (23). Only 13.3 percent of the classes had participation rates under the national average (Table 5). In 70 percent of the classes less

Table 3 Characteristics of study sample of elementary teachers

Biographical Information	N	%
Years taught elementary school		
Less than 1 year	-	-
1-5 years	19	22.9
6-10 years	35	42.2
11-20 years	17	20.5
Over 20 years	12	14.5
Years employed in present position		
Less than 1 year	8	9.6
1-5 years	39	47.0
6-10 years	19	22.9
Over 10 years	17	20.5
Age group		
20-25 years	3	3.6
26-30 years	23	27.7
31-40 years	25	30.1
41-50 years	18	21.7
Over 50 years	14	16.9
Children		
Yes	57	68.7
No	26	31.3
Number of children in elementary school		
None	35	60.3
One	11	19.0
Two	10	17.2
Three	1	1.7
Four or more	1	1.7
Frequency of school lunch participation		
Eat twice a week or more	16	19.8
Once a week	6	7.4
Once a month	17	21.0
Never	26	32.1
Other	16	19.8



Table 4 Characteristics of sample classes<sup>1</sup>

Characteristic	Classes	
	N	%
Number of students in class		
14-20	23	27.6
21-25	43	51.7
26-33	17	20.4
Percent of students with working mothers		
20-30	2	2.4
31-40	12	14.4
41-50	26	31.2
51-60	12	14.4
61-70	15	18.0
71-80	10	12.0
81-90	5	6.0
91-100	1	1.2
Percent of bussed students		
1-10	19	22.9
11-20	8	9.6
21-30	8	9.6
31-40	11	13.2
41-50	5	6.2
51-60	10	12.0
61-70	7	8.4
71-80	10	12.0
81-90	4	4.8
91-100	1	1.2

<sup>1</sup>N = 83

Table 5 Levels of student participation in school lunch program by percentage of classes

% Level of Participation <sup>1</sup>	Type of Participation							
	Free		Reduced		Paid		Total	
	Classes							
	N	%	N	%	N	%	N	%
0-5	23	27.7	55	70.1				
6-10	9	10.8	19	22.8				
11-15	11	13.2	7	8.4				
16-20	13	15.6	1	1.2	3	3.6		
21-25	10	12.0	1	1.2	2	2.4		
26-30	4	4.8			2	2.4		
31-35	6	7.2			4	4.8		
36-40	4	4.8			6	7.2	1	1.2
41-45					8	9.6	4	4.8
46-50	1	1.2			9	10.8		
51-55	1	1.2			15	18.0	4	4.8
56-60	1	1.2			8	9.6	5	6.0
61-65					9	10.8	9	10.8
66-70					10	12.0	12	14.4
71-75					3	3.6	12	14.4
76-80					4	4.8	13	15.6
81-85							12	14.4
86-90							6	7.2
91-95							5	6.0

<sup>1</sup> Ranges for various levels of participation

Ratio of students participating to student attendance; data from 5 day average

<sup>2</sup> N = 83 classes

than 25 percent of the students received free meals and less than 5 percent received reduced price lunches.

### Interpretation of Attitude Statements for Total Sample

Agreement-disagreement mean scores for the attitude statements from the overall group were interpreted by a committee acquainted with the school lunch program. Also, results were evaluated in relation to studies in the literature on the school lunch program, and comments made on the attitude instruments. Statements have been grouped by categories (Table 6) outlined in the methodology.

#### I. Teachers' attitude toward the school lunch program.

The tendency to agree with item 2 (teachers and administrators have favorable attitudes), indicated that teachers may believe they have a positive attitude toward the school lunch program, but this may not be reflected in their actions, as evidenced by less agreement with item 28 (it is enjoyable to eat school lunch).

#### II. Teachers' attitude toward eating with class.

There was strong disagreement with items 5, 45, and 53. Teachers may believe that their presence does not influence students' eating habits, indicated by their disagreement with item 5 (participation would increase) and item 53 (students would eat better in classroom). The strong resistance to eating with their classes (item 45), could be attributed to several things indicated by teachers in their comments; i.e., they need time away from students, and students need to be away from the teacher. "Time needed for a planning period" was another comment made and an issue over which there has been much negotiation between teachers and school boards.

Table 6 Agreement-disagreement mean scores<sup>1</sup> on attitude statements for overall group (N = 83)

Item No.	Item	Mean	Std. Dev.
I	<u>Teachers' attitude toward school lunch program</u>		
2	Teachers and administrators have a favorable attitude toward the school lunch program.	2.28 ±	.88
28	It is an enjoyable experience for me to eat school lunch.	2.66 ±	.83
II	<u>Teachers' attitude toward eating with class</u>		
5	Student participation in the school lunch program would increase if teachers ate with their students.	3.33 ±	.78
45	Teachers should eat with their classes.	3.56 ±	.82
53	Students would eat better if they could take their trays to their classrooms.	3.33 ±	.79
III	<u>Nutrition education</u>		
6	Developing favorable attitudes toward food is more important than teaching facts about nutrition.	2.49 ±	.73
10	A nutritionist on the school staff would be a valuable resource person for nutrition education.	2.13 ±	.83
14	Children develop better eating habits if they are offered a wide variety of foods.	2.22 ±	.73
24	It is easier to influence eating habits of younger, rather than older, children.	1.99 ±	.77
39	Effective nutrition education can be achieved through cooperation of school lunch personnel and teachers.	1.83 ±	.63

<sup>1</sup>Scale; 1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree

Table 6 (cont.)

Item No.	Item	Mean	Std. Dev.
47	Nutrition information is more meaningful if it is integrated into other subjects, rather than being taught as a separate unit.	2.49 ±	.68
52	A greater emphasis on nutrition education is needed in the school curriculum.	2.40 ±	.75
IV	<u>Merchandising the school lunch</u>		
20	Parent involvement (e.g. open house, visitation at meals, advisory committees) would improve students' attitude toward school lunch.	2.27 ±	.73
21	Popular foods are not served regularly enough.	2.77 ±	.70
22	New service styles (e.g. box lunch, buffet) would increase participation in the school lunch program.	2.58 ±	.73
25	Special event luncheons are a good idea (e.g. Thanksgiving luncheon).	1.60 ±	.62
43	A greater choice of menu items is needed in the school lunch (e.g. salad plate, sandwich plate, entree choice).	2.35 ±	.78
48	Family style service would improve the school lunch program.	3.03 ±	.76
V	<u>Lunchroom environment</u>		
19	The cafeteria is too crowded during the lunch period.	2.43 ±	.82
23	Sanitation in the school foodservice is good.	1.59 ±	.49
42	Seating capacity and size of the lunchroom are adequate.	2.45 ±	.74
VI	<u>Making improvements in lunchroom environment</u>		
17	A separate dining area would improve the school lunch program.	2.17 ±	.79

Table 6 (cont.)

Item No.	Item	Mean	Std. Dev.
29	Smaller lunchroom tables would improve the atmosphere of the school lunch program.	2.41 ±	.75
51	Teachers would participate in the school lunch program more often if the noise level were reduced.	2.61 ±	.86
VII	<u>Plate waste in school lunch program</u>		
1	Children leave about the same amount of food at school as they do at home.	2.73 ±	.62
26	There is greater plate waste when students are preoccupied with other activities.	2.21 ±	.80
34	The amount of food left uneaten on students trays is excessive.	1.97 ±	.74
37	Student participation in menu planning would result in less plate waste.	2.09 ±	.71
50	The main reason for plate waste is the children's dislike of the food served.	2.28 ±	.78
VIII	<u>Food quality</u>		
13	Heated trays would improve the acceptance of the food served in school.	2.75 ±	.74
16	Hot foods (meats, vegetables, etc.) are served hot in the school lunch program.	2.17 ±	.80
27	Cold foods (salads, canned fruits, etc.) are served cold.	1.88 ±	.51
33	School lunch is appetizing and appealing.	2.15 ±	.83
35	The quality of food (flavor, texture, variety) in the school lunch is good.	2.17 ±	.81
46	The food served in the school lunch has an attractive appearance.	2.04 ±	.65

Table 6 (cont.)

Item No.	Item	Mean	Std. Dev.
IX	<u>Teachers' meal</u>		
4	School lunch provides a nutritionally adequate meal for teachers.	2.35 ± .90	
9	The portion sizes for teachers are too small.	2.31 ± .87	
12	The caloric level of the school lunch is too high for teacher's needs.	1.88 ± .80	
31	The cost of the school lunch is too high for teachers.	2.18 ± .87	
X	<u>Students' meal</u>		
18	The utensils (trays, flatware, etc.) used in the school lunch program are adequate for students needs.	1.81 ± .48	
32	School lunch provides a nutritionally adequate diet for students.	1.83 ± .63	
40	Students are not familiar with many foods served on the school lunch menu.	2.86 ± .63	
41	The portion sizes for students are too small.	2.84 ± .60	
44	The price of the school lunch is too high for students.	2.95 ± .60	
XI	<u>Length of lunch</u>		
8	The students are rushed when eating lunch.	2.65 ± .89	
15	The lunch period should be lengthened.	2.65 ± .95	
30	Other class periods should be shortened in order to lengthen the lunch period.	3.18 ± .80	
38	Students have to wait too long in the school lunch line.	2.79 ± .78	
49	A longer lunch period is desirable even if it means lengthening the school day slightly.	3.24 ± .76	

Table 6 (cont.)

Item No.	Item	Mean	Std. Dev.
XII	<u>School foodservice employees</u>		
7	The school lunch program personnel are qualified for their jobs.	1.73 ±	.55
36	School lunch employees have a favorable attitude toward their job.	1.81 ±	.66
XIII	<u>Free and reduced price lunches</u>		
3	There should be free lunches for all students regardless of family income.	3.60 ±	.70
11	Free or reduced priced meals should be provided for students from low income families.	1.90 ±	.75



### III. Nutrition education.

Overall, teachers had a positive attitude toward the importance of nutrition education and its relation to the school lunch program. This relationship is supported further by respondents' agreement with item 24 (it is easier to influence younger children's eating habits), and item 10 (a nutritionist would be a valuable resource person). Teachers expressed neutral responses to item 52 "greater emphasis on nutrition education is needed" and item 6 "developing favorable attitudes is more important than teaching nutrition facts." Teachers believed that cooperation with school foodservice employees is important for effective nutrition education (item 39). Also, they tended to agree that children develop better eating habits if offered a wide variety of foods (item 14).

### IV. Merchandising the school lunch.

Item 25, "special event luncheons are a good idea" was endorsed by the respondents, suggesting that teachers are supportive of special efforts of the school foodservice staff. They were somewhat supportive of item 43, "greater choice of menu items is needed" and item 20, "parent involvement would improve students' attitude," which reflect an interest in program improvements. Comments of teachers indicated that they believed school was a family responsibility, and therefore parent involvement is important; also involvement might enlighten parents to problem situations that occur in the school lunchroom. Disagreement with item 21, "popular foods are not served enough" may indicate satisfaction with the school lunch menu. "Family style service" (item 48), was viewed negatively by teachers, while their attitudes were neutral regarding "new service styles" (item 22). This may be because they believe the present school lunch program is adequately meeting the students' needs, or

perhaps are threatened by change and not knowing what their responsibilities would be in a new situation.

V. and VI. Lunchroom environment and making improvements in the environment.

Teachers expressed neutral opinions on items 19 and 42 regarding seating capacity and size of lunchroom. They supported improving the cafeteria atmosphere as evidenced by item 17, "separate dining room would improve school lunch" and item 29, "smaller tables would improve the atmosphere." Respondents also thought that "sanitation was good" (item 23), which may indicate that they believed school foodservice employees were performing satisfactorily. A common criticism of the school lunch program was the high noise level; yet teachers indicated that they would not participate more frequently even if the noise level were reduced (item 51). This may be related to the negative attitudes expressed by teachers toward item 45, "eating with their class," or reflected in the low participation of teachers in the school lunch program.

VII. Plate waste in the school lunch program.

Responses on items 1, 34, and 50 seemed to indicate that teachers believed that there was an excessive amount of plate waste (item 34) in the school lunch program, and that it was due to "dislike of food served" (item 50). Disagreement with item 1, "children leave same amount of food at school as at home" also reflected this belief. Teachers supported item 26, "greater plate waste results when students are preoccupied," and comments made on the attitude instruments indicated that respondents believed students rushed through lunch to get to recess sooner. Teachers supported student participation in menu planning and believed that this would help reduce plate waste (item 37).

### VIII. Food quality.

Attitudes reflected agreement with all statements in this category (16, 27, 33, 35, 46) except item 13. These responses suggest that teachers believed the food served in the school lunch was of good quality.

### IX. Teachers' meal.

Overall respondents believed that school lunch provided a "nutritionally adequate meal" (item 4), but that the cost for teachers was "too high" (item 31). This belief was reflected in many comments made on the attitude instruments. Teachers may not realize that all student meals are subsidized, but meals for adults are not. Comments indicated that when teachers have to pay the full cost of the lunch they believe they are "paying more money for the same amount of food." Teachers also tended to believe that the "calorie level of school lunch is too high" (item 12); however, they also tended to agree that "portion sizes are too small" (item 9), which appear to be conflicting attitudes. Comments are suggested that too many "starchy foods were served" and might indicate that teachers would like larger portions of certain foods, e.g. salads and vegetables.

### X. Students' meal.

There was definite agreement among teachers that "school lunch provides a nutritionally adequate diet" (item 32). The favorable attitude toward the students' meal was further supported by teachers' disagreement with statement 4, "portion sizes are too small" and statement 44, "price is too high." Disagreement with statement 40, "students are not familiar with many foods served," may again suggest that teachers are satisfied with the school lunch menu. Respondents definitely agreed that "utensils used were adequate" (item 18). The positive attitude expressed toward

the students' meal may be a reflection of the favorable attitude of teachers toward the school lunch program.

XI. Length of lunch.

Teachers believed that the length of the lunch period was adequate, evidenced by their disagreement with item 3, "students are rushed," item 38, "students have to wait too long in line," and item 15, "lunch period should be lengthened." This opinion is contrary to that expressed by school foodservice personnel, indicating that teachers may not be aware of this need because of their low participation in the program. Teachers expressed strong disagreement with statements suggesting shortening other class periods (item 30) or lengthening the day (item 49) in order to lengthen the lunch period, supporting their belief that the length of the lunch period is adequate.

XII. School foodservice employees.

Teachers definitely agreed that school lunch personnel are qualified for their jobs (item 7), and that they had a favorable attitude toward the school lunch program (item 36).

XIII. Free and reduced price meals.

Teachers expressed strong resistance to "free lunches for all students regardless of family income" (item 3). However, teachers did support item 11, "students from low income families should receive free or reduced price lunches."

XIV. Students' benefits.

Items in Section III, number 1 (a-1) were incorporated into a category regarding teachers' attitude toward the benefits of the school lunch program to students (Table 7). Overall, teachers expressed positive attitudes toward the benefits of school lunch and believed the most

Table 7 Importance mean scores<sup>1</sup> on attitude statements for overall group on student participation

Item	Mean	Std. Dev.
In eating lunch at school, students have an opportunity to:		
a. Make friends	3.15 ±	.98
b. Learn good table manners	3.29 ±	1.10
c. Buy nourishing food	3.80 ±	1.03
d. Have a hot meal	4.09 ±	.82
e. Learn good eating habits	3.70 ±	1.12
f. Learn to enjoy new menu items	3.34 ±	1.01
g. Learn about food habits of others	2.61 ±	1.07
h. Put nutrition knowledge into practice	3.75 ±	.98
i. Relax	3.69 ±	1.15
j. Buy a meal at moderate cost	3.84 ±	.93
k. Be served quickly	3.34 ±	.97
l. Eat in a pleasant atmosphere	3.94 ±	.99

<sup>1</sup>Scale; 1 = not at all important, 2 = not very important, 3 = of moderate importance, 4 = very important, 5 = extremely important  
N varies from 79 to 83

important contributions to students were: to provide nourishing food (item c) and a hot meal (item d) at a moderate cost (item j). Teachers also believed that by eating lunch at school students had an opportunity to eat in a pleasant atmosphere (item l). These responses supported the favorable attitudes teachers expressed toward students' meal and food quality.

XV. Teacher participation in the school lunch program.

Items in Section III, number 2 (a-h) composed a category regarding teachers' participation in the school lunch program (Table 8). Teachers indicated that if foods served were lower in calories (item g) or if daily specials were offered (item h) participation in the program might increase.

Mean Scores on Attitude Items among  
Teachers in Various Schools

One-way analyses of variance (ANOVA) were computed for all attitude statements using schools as the independent variable, to identify if there were any significant relationships in the attitudes of teachers from the different schools in the sample (Table 9).

I. Teachers' attitude toward school lunch program.

Teachers from school 7 had a more positive attitude toward item 2 (teachers and administrators have favorable attitude) than did those in schools 1, 4, 5, or 6. This could be related to several factors: (a) comments made on attitude instruments from school 7 indicating that teachers believed they had an "outstanding foodservice," or (b) that teachers from this school take their breaks in the lunchroom, allowing them to interact more frequently with school foodservice employees.

Table 8 Mean scores<sup>1</sup> on attitude statements for overall group on teacher participation

Item	Mean	Std. Dev.
Teachers would participate in the lunch program more often if:		
a. More of the others did	3.52 ± .75	
b. Prices were lower	2.25 ± 1.01	
c. Portions were increased	2.49 ± 1.11	
d. Greater variety was offered	2.08 ± 1.07	
e. The quality of food improved	2.33 ± 1.11	
f. The lunch period was longer	2.89 ± 1.10	
g. Foods served were lower in calories	1.56 ± .76	
h. Specials (e.g. salad plates) were featured daily	1.39 ± .78	

<sup>1</sup>Scale; 1 = definitely an influence, 2 = probably an influence, 3 = may not be an influence, 4 = definitely not an influence  
N varies from 79 to 80

Table 9 Mean scores on attitude items of teachers in selected elementary schools<sup>1</sup>

Item	Teachers by School							F Ratio	Differences Among Groups	
	1 (N=7)	2 (N=8)	3 (N=10)	4 (N=17)	5 (N=16)	6 (N=13)	7 (N=12)			
	Mean <sup>2</sup> Std. Dev.									
I <u>Teacher's attitude toward SLP</u>										
#2	2.29 .49	2.00 .93	2.22 .83	2.53 .62	2.44 1.09	2.69 .85	1.50 .67	2.83**	7 vs 1,4,5,6	
#28	3.33 .52	2.29 .49	2.63 .92	2.63 .81	2.86 .86	3.00 .91	2.00 .42	3.16**	2 vs 1,6 7 vs 1,4,5,6	
III <u>Nutrition education</u>										
#39	1.86 .38	2.00 .76	2.44 .88	1.94 .25	1.69 .70	1.50 .52	1.58 .51	2.96**	3 vs 5,6,7	
V <u>Lunchroom environment</u>										
#19	2.83 .75	3.00 .53	2.63 .52	2.24 .75	2.31 .95	1.77 .73	2.83 .72	3.66**	2 vs 4,5,6 6 vs 1,3,7 7 vs 4	
#29	2.14 1.07	2.75 .46	2.71 .76	2.60 .51	1.88 .50	2.23 .93	2.83 .58	3.49**	5 vs 2,3,4, 7 vs 1,5,6	

<sup>1</sup>Data presented for significant findings only<sup>2</sup>Scale = 1, strongly agree to 4, strongly disagree

\*P ≤ .05, \*\*P ≤ .01, \*\*\*P ≤ .001



Table 9 (cont.)

Item	Teachers by School							F Ratio	Differences Among Groups
	1 (N=7)	2 (N=8)	3 (N=10)	4 (N=17)	5 (N=16)	6 (N=13)	7 (N=12)		
	Mean Std. Dev.								
#42	2.14 .69	2.00 .00	2.11 .33	2.65 .61	2.63 .96	2.85 .80	2.25 .75	2.34*	2 vs 4,5 6 vs 1,2,3,7
VIII Food quality									
#16	2.14 .38	1.88 .35	1.78 .67	2.81 .66	1.75 .58	2.92 .86	1.58 .51	9.94***	4 vs 1,2,3,5,7 6 vs 1,2,3,5,7
#27	1.86 .38	1.88 .35	1.50 .53	2.00 .35	1.75 .45	2.23 .73	1.75 .45	2.48*	4 vs 3 6 vs 3,5,7
#33	2.00 .89	2.25 .89	1.75 .46	2.35 .49	2.00 .97	2.92 .76	1.50 .52	4.83***	6 vs 1,2,3,4,5,7 7 vs 2,4
#35	2.50 1.05	2.25 .89	1.63 .52	2.21 .58	2.13 .81	2.92 .67	1.58 .51	4.61***	1 vs 3,7 6 vs 2,3,4,5,7 7 vs 2,4,5
#46	2.17 .75	1.86 .69	1.89 .33	2.31 .48	1.75 .68	2.50 .80	1.75 .45	2.98**	4 vs 5,7 6 vs 2,3,5,7
IX Teachers meal									
#4	3.00 .82	2.50 .93	2.00 .87	2.13 .34	2.31 .95	3.00 1.08	1.75 .62	3.71**	1 vs 3,4,7 2 vs 7 6 vs 3,4,5,7
#9	3.14 .38	2.25 .71	2.22 .67	2.40 .74	2.21 .89	1.62 .87	2.67 .98	3.37**	1 vs 2,3,4,5,6 6 vs 4,7

Table 9 (cont.)

Item	Teachers by School							F Ratio	Differences Among Groups	
	1 (N=7)	2 (N=8)	3 (N=10)	4 (N=17)	5 (N=16)	6 (N=13)	7 (N=12)			
	Mean Std. Dev.									
X	<u>Students meal</u>									
	#44	3.00 .00	2.25 .89	2.80 .63	3.06 .24	3.13 .72	3.08 .49	3.00 .60	2.61*	2 vs 1,3,4,5, 6,7
XI	<u>Length of lunch</u>									
	#38	3.14 .38	3.13 .35	2.89 .60	2.59 .62	2.25 .93	2.69 .95	3.42 .51	4.03**	5 vs 1,2,3 7 vs 4,5,6
XII	<u>School foodservice</u>									
	<u>employees</u> #7	1.86 .38	1.75 .46	1.44 .73	1.81 .40	1.80 .56	2.08 .49	1.25 .45	3.51**	6 vs 3 7 vs 1,2,4,5,6
	#36	1.83 .75	1.88 .35	1.40 .52	2.00 .38	1.75 .58	2.50 .80	1.25 .45	6.33***	4 vs 3,7 6 vs 1,2,3,4, 5,7 7 vs 1,2,5

Agreement on item 28, "it is an enjoyable experience to eat lunch," by teachers from schools 2 and 7 may be related to the fact that food is prepared at these two schools rather than being transported from the district junior high or high school.

### III. Nutrition education.

On item 39 (effective nutrition education can be achieved through cooperation with school foodservice and teachers), there was a significant difference in the responses of teachers in school 3, versus those teachers in schools 5, 6, and 7. Teachers in school 3 seemed to have a neutral attitude in contrast to more positive attitudes expressed by those teachers in the other schools. Responses to this item may reflect the degree of teacher involvement in the lunch program, and with the foodservice personnel in their schools.

### V. Lunchroom environment.

Teachers at school 6 believed more strongly than teachers in other schools that the lunchroom size was not adequate (items 19, 42). Teachers at school 5, one of the largest schools in the study, thought "smaller lunchroom tables would improve the atmosphere" while teachers at school 7 believed more strongly than teachers from other schools, that it would not. School 7 is a smaller school, with a smaller eating area, which may influence this opinion.

### VIII. Food quality.

Teachers at school 6 expressed the most negative attitudes toward food quality, followed by teachers in school 4 (items 16, 27, 33, 35, 46). Food is not prepared in the kitchen at school 6, but is transported from the high school, which may account for these negative attitudes. School 4 was the largest school in the sample, and its size may account

for the negative teacher attitudes. Overall, the most positive attitudes toward food quality were expressed by teachers at school 7. Comments on attitude instruments indicated that teachers thought they had "an outstanding foodservice, with good management, and high quality food." These favorable responses support other positive attitudes expressed by respondents from this school.

IX. Teachers' meal.

Teachers at school 7 agreed with the statement "school lunch provides a nutritionally adequate diet for teachers," while teachers from schools 1 and 6, disagreed. Teachers at school 6 also believed that "portions were too small" while teachers at schools 1 and 7 disagreed with this statement.

X. Students' meal.

Only those teachers at school 2 believed that the cost of the school lunch was too high for students (item 44).

XI. Length of lunch.

Teachers at school 5, one of the largest schools in the district, agreed with item 38, "students have to wait too long in line," and this may be due to the size of this school. Teachers at school 7, a smaller school, strongly disagreed with this statement and again, this could be related to the size of the school and the way the lunch periods are scheduled.

XII. School foodservice employees.

Overall, teachers from all schools expressed favorable attitudes toward school foodservice employees (items 7, 36), but results indicate that teachers at school 7 were most positive and those at school 4 and 6, the least. Comments made on attitude instruments from school 7

suggested that the foodservice staff liked all the students, and had a strong desire to please them.

#### XIV. Students' benefits.

Teachers at schools 1 and 7 believed an important function of school lunch was to give students an opportunity "to learn good table manners" (Table 10). Respondents in all schools also agreed that another function of the school lunch is to "provide students with a hot meal"; teachers at schools 6 and 7 were the most positive.

#### XIV. Teacher participation.

Teachers at school 1 believed strongly that lower prices and larger portions would have a positive influence on teacher participation in school lunch (Table 11). Teachers at school 6 thought participation would increase if food quality improved (item e), supporting their attitude responses on food quality. Teachers at school 7 believed that improving food quality would not effect participation, which may mean they believe the food, and/or teacher participation, are already adequate.

#### Effects of Participation and Grade Levels on Teachers' Attitudes

Two-way analyses of covariance were computed using participation level and grade level as independent variables and controlling for the effects of three covariates:  $X_1$ , percentage of bussed students;  $X_2$ , percentage of students with working mothers, and  $X_3$ , percentage of students receiving free and reduced priced meals (Table 12). F ratios for the analyses are included in Table 14 (Appendix E).

Table 10 Mean scores on attitude items of teachers on student participation by school<sup>1</sup>

Item	Teachers by School							F Ratio	Differences Among Group
	1 (N=7)	2 (N=8)	3 (N=10)	4 (N=17)	5 (N=16)	6 (N=13)	7 (N=12)		
	Mean <sup>2</sup>								
	Std. Dev.								
In eating lunch at school, students have an opportunity to:									
a. Learn good table manners	3.86 .69	3.25 1.28	2.56 .88	2.94 .90	3.27 1.28	3.36 1.21	4.00 .85	2.33*	1 vs 3 7 vs 4, 3
d. Have hot meal	4.14 .38	3.38 1.06	3.90 .99	3.94 .66	3.94 .77	4.42 .79	4.75 .45	3.43**	6 vs 2 7 vs 2, 3, 4, 5

<sup>1</sup>Data presented for significant findings only<sup>2</sup>Scale = 1, not at all important to 5, extremely important

\*P ≤ .05, \*\*P ≤ .01

Table 11 Mean scores on attitude items of teachers on teacher participation by school<sup>1</sup>

Item	Teachers by School							F Ratio	Differences Among Group
	1	2	3	4	5	6	7		
	(N=7)	(N=8)	(N=10)	(N=17)	(N=16)	(N=13)	(N=12)		
	Mean <sup>2</sup>								
Std. Dev.									
Teachers would participate in the lunch program more often if:									
b. Prices were lower	3.33 .82	1.88 1.13	1.90 .99	2.31 .95	2.50 .89	1.85 .90	2.27 1.10	2.24*	1 vs 2,3,4,6,7
c. Portions were increased	3.67 .52	2.00 1.20	1.89 .93	2.63 .89	2.88 1.02	1.77 .93	2.82 1.25	4.03**	1 vs 2,3,4,6 4 vs 6 5 vs 2,3,6 7 vs 3,6
e. Food quality was improved	1.83 1.33	2.63 1.30	2.56 .73	2.19 .91	2.38 1.02	1.23 .44	3.64 .50	7.76***	6 vs 2,3,4,5 7 vs 2,3,4,5,6

<sup>1</sup>Data presented for significant findings only<sup>2</sup>Scale = 1, definitely an influence to 4, definitely not an influence

\*p ≤ .05, \*\*p ≤ .01, \*\*\*p ≤ .001

Table 12 Mean attitude scores from two-way analyses of covariance<sup>1</sup>

Item	Variable	Mean and Std. Error <sup>2</sup>	p Level
<u>I Teachers' attitude toward school lunch program</u>			
#28	Enjoyable experience to eat school lunch		
	Grade level Lower (1-4) Upper (5-6)	2.55 ± .11 2.97 ± .17	.05
<u>II Teachers' attitude toward eating with class</u>			
#5	Student participation would increase		
	Level of participation Low Medium High	2.99 ± .19 3.23 ± .18 3.69 ± .15	.02
<u>IV Merchandising the school lunch</u>			
#21	Popular food not served enough		
	Level of participation Low Medium High	2.54 ± .17 2.37 ± .16 3.09 ± .13	.003

<sup>1</sup>Data presented for significant findings only<sup>2</sup>Scale = 1, strongly agree to 4, strongly disagree



Table 12 (cont.)

Item	Variable	Mean and Std. Error	P Level	
VI Plate waste in school lunch program	Interaction of: level of participation and grade level			
	Low	2.64 ± .17	.05	
	Low	2.44 ± .27		
	Medium	2.80 ± .13		
	High	1.93 ± .29		
	High	3.02 ± .17		
			3.15 ± .21	
	#26 Greater when students preoccupied	Interaction of: level of participation and grade level		
		Low	1.95 ± .20	.01
		Low	2.39 ± .31	
		Medium	2.13 ± .15	
High		2.78 ± .33		
High		2.54 ± .19		
			1.95 ± .24	
VIII Food quality		Interaction of: level of participation and grade level		
		Low	2.25 ± .16	.003
		Low	2.81 ± .16	
		Medium	3.05 ± .13	
	High	2.78 ± .33		
	High	2.54 ± .19		

Table 12 (cont.)

Item	Variable	Mean and Std. Error	P Level	
IX Teachers' meal	Interaction of: level of participation and grade level			
	Low	2.67 ± .17	.002	
	Low	1.84 ± .26		
	Medium	2.72 ± .13		
	Medium	2.89 ± .28		
	High	2.73 ± .16		
	High	3.36 ± .20		
	#12 Calorie level too high	Interaction of: level of participation and grade level		
		Low	1.87 ± .19	.01
		Low	1.45 ± .30	
Medium		1.90 ± .15		
Medium		1.85 ± .33		
High		1.69 ± .19		
High		2.55 ± .24		
XI Length of lunch		Level of participation		
		Low	2.24 ± .22	.01
		Medium	2.52 ± .21	
	High	3.11 ± .18		
	#8 Students rushed when eating	Grade level		
		Lower	3.05 ± .01	.03
	Upper	3.51 ± .17		

Table 12 (cont.)

Item	Variable	Mean and Std. Error	p Level
#49	Lengthen school day to lengthen lunch	3.11 ± .10 3.55 ± .16	.02
XIII	Free and reduced price lunches		
#11	Should provide for students from low income families		
	Interaction of: level of participation and grade level		
	Low	1.66 ± .19	.03
	Low	1.79 ± .29	
	Medium	1.79 ± .15	
	Medium	2.20 ± .31	
	High	2.39 ± .18	
	High	1.68 ± .23	

I. Teachers' attitude toward school lunch program.

There was a significant relationship between grade level and attitude response on item 28, "enjoyable experience to eat school lunch." Teachers of lower grades (grades 1-4) expressed neutral attitudes, while upper grade teachers were more negative.

II. Teachers' attitude toward eating with class.

On item 5 ("student participation would increase"), attitudes differed significantly among teachers classified by participation level of their classes. Teachers with classes at all levels of participation expressed disagreement with this statement and those teachers of high participation classes expressed the most disagreement. This may indicate that although a teacher does not wish to eat with his/her class, he/she may encourage student participation.

III. Merchandising the school lunch.

On item 21, "popular food not served enough," teachers of high participation classes disagreed more frequently than did teachers of low participation classes. There was also a significant interaction between participation level and grade level. Upper grade level teachers with high participation classes expressed the most disagreement.

VI. Plate waste.

A significant interaction between participation level and grade level resulted from analysis of responses on item 26, "greater plate waste when students are preoccupied." Low level participation, lower grade teachers and high level participation, upper grade teachers expressed the most agreement with this statement.

#### VIII. Food quality.

On item 13, "heated trays would increase food acceptance," both participation level and the interaction of participation level and grade level were significantly related to responses. Teachers of high participation classes and upper grade levels expressed the most disagreement with this item.

#### IX. Teachers' meal.

On item 12, "calorie level too high," a significant interaction was found between participation level and grade level. The strongest disagreement with this item was expressed by upper grade teachers with high participation classes.

#### XI. Length of lunch.

Overall, teachers expressed disagreement on attitude items relating to lengthening the lunch period. Differences in attitudes were found among teachers by level of participation on item 8, "students are rushed when eating." Those teachers of high participation classes expressed the most disagreement.

On item 30, "shorten other classes to lengthen lunch," and 49, "lengthen school day to lengthen lunch," attitude responses differed significantly between lower and upper grade teachers. On both items upper grade teachers expressed more negative attitudes.

#### XIII. Free and reduced price lunches.

Overall, teachers agreed with item 11, to "provide for students from low income families." Low level participation, lower grade teachers, and high level participation, upper grade teachers were most supportive.

## Predictors of Average Daily Participation

To determine if the participation rate could be predicted on the basis of teachers' attitude alone, or in combination with control variables ( $X_1$ , percentage of bussed students;  $X_2$ , percentage of students with working mothers; and  $X_3$ , percentage of students receiving free or reduced priced meals) multiple regression was used with participation rate as the dependent variable (Table 13). Because of the large number of attitude items, attitude scales were developed for use in this analysis. Two stepwise multiple regression analyses were computed:

- (a) first, using only the attitude scale scores as independent variables, then
- (b) using attitude scale scores and control variables ( $X_1$ ,  $X_2$ , and  $X_3$ ) as independent variables.

If the external factors ( $X_1$ ,  $X_2$ , and  $X_3$ ) are ignored, then three attitude scales accounted for significant amounts of variance in the average daily participation as follows:

- (a) teachers' attitude toward eating with class
- (b) food quality
- (c) nutrition education

When using attitude scale scores and control variables as independent variables, free and reduced priced meals ( $X_3$ ) accounted for 13 percent of the variance in average daily participation and percent of bussed students ( $X_1$ ) accounted for 9 percent. Attitude scales which also accounted for some of the variance in average daily participation were: teachers' attitude toward eating with their classes, 8 percent, and food quality, 3 percent.

Table 13 Multiple regression for predictors of average daily participation<sup>1</sup>

Predictors	Partial Model <sup>2</sup>		Full Model <sup>3</sup>	
	$\beta$	$r$	$\beta$	$r$
III. <u>Nutrition education</u>	-.010	-.177		
II. <u>Teachers' attitude toward eating with class</u>	-.016	-.233	-.022	-.233
VIII. <u>Food quality</u>	.012	.195	.008	.195
Percent bussed students			.101	.427
Percent free and reduced price lunches			.307	.385
Intercept	.79		.62	
$R^2$	.14		.33	
R	.38		.58	

<sup>1</sup>Stepwise multiple regression and variables entered at .10 level of significance

<sup>2</sup>Using only attitude scale scores as independent variables

<sup>3</sup>Using attitude scale scores and control variables as independent variables

Results indicate that average daily participation is predominately a function of the percentage of students who are bussed to school and the percentage of students receiving free or reduced priced meals. The number of students with working mothers did not significantly influence participation. A significant relationship was also found between teachers' perceived view of food quality and student participation. It may be that if a teacher believes the food quality is good, this attitude is conveyed in their behavior and influences participation in the program.

Findings indicated that participation increases as a function of how resistant teachers are to eating with their classes. As comments on attitude items suggested, it may be that both students and teachers need a break from each other. It is not clear why participation rates are relatively low in the classes where teachers are most supportive of nutrition education. It could be that these teachers perceive a greater need for nutrition education. Further research is needed in both of these areas since they appear to contradict conventional wisdom.



## SUMMARY AND CONCLUSIONS

School feeding programs are viewed as increasingly important contributors to children's health and education. Many factors that affect student participation in the school lunch program have been identified, but little information is available on the relationship of teachers' attitudes toward the school lunch program and student participation. The objectives of this study were (a) to assess the attitudes of elementary school teachers toward the school lunch program and determine the influence on student participation; (b) to consider other factors which could influence student participation (grade level, percentage of bussed students, percentage of students with working mothers, and percentage of students receiving free or reduced meals); and (c) to determine if student participation could be predicted on the basis of teachers' attitude alone or in combination with other factors.

Elementary teachers in seven elementary schools in a medium sized midwestern city constituted the study sample ( $N = 98$ ). The attitude instrument consisted of 55 statements using a Likert-type scale. Information requested included biographical data, enrollment in class, number of students bussed, number of students with working mothers, and statements designed to assess teachers' attitudes toward the school lunch program. The attitude instrument and cover letter were mailed to all teachers and two weeks later a follow-up letter and duplicate instrument were sent to non-respondents. Following the first and second mailings, 83 completed instruments (85%) were returned. Respondents spanned all age groups; a sizeable number were 25-40 years of age ( $N = 48$ ). Class

size ranged from 14-33 students, and 90 percent of the classes had 50 percent or more participation in the school lunch program.

Agreement-disagreement mean scores on the attitude statements for the overall group were interpreted by a panel acquainted with the school lunch program and in relation to studies in the literature. The positive attitudes expressed toward the school lunch program (food quality, students' meal, and benefits to students) offer encouragement to school foodservice management, while negative attitudes toward eating with class, plate waste, and teachers' meal provide insight into potential problem areas.

One-way analyses of variance were computed for all attitude statements to identify significant differences in attitudes of teachers from the various schools. Findings indicated differences among teachers in various schools could be related to school size and whether the school has on-site preparation or food transported from another school. Teachers from smaller schools with on-site preparation tended to have the most positive attitudes.

Two-way analyses of covariance were computed using participation level and grade level as independent variables and controlling for the effects of covariates  $X_1$ , percentage of bussed students;  $X_2$ , percentage of students with working mothers, and  $X_3$ , percentage of students receiving free or reduced price meals. Results indicated attitude differences between upper and lower grade level teachers. Level of participation in the school lunch program was also found to be related to attitude response. Further research needs to be conducted to investigate the reasons for these differences. Teachers with positive attitudes may

reflect these attitudes in their teaching behaviors and actions, influencing student participation in the school lunch program.

To determine if the participation rate could be predicted on the basis of teachers' attitude alone, or in combination with control variables ( $X_1$ ,  $X_2$ , and  $X_3$ ) defined above multiple regression was used. Because of the large number of attitude items, 14 attitude scales were developed, as follows: (1) teachers' attitude toward school lunch program, (2) teachers' attitude toward eating with class, (3) nutrition education, (4) merchandising the school lunch, (5) lunchroom environment, (6) making improvements in lunchroom environment, (7) plate waste, (8) food quality, (9) teachers' meal, (10) students' meal, (11) length of lunch, (12) school foodservice employees, (13) free and reduced priced lunches, and (14) students' benefits. Coefficient alpha was used to determine the reliability of the scales. Of the original 14 scales only nine had a coefficient alpha of .50 which was considered the minimum acceptable level.

Results indicate that daily participation is predominately a function of the control variables  $X_3$ , percentage of students receiving free or reduced meals; and  $X_2$ , percentage of bussed students. Two attitude scales (teachers' attitude toward eating with class and food quality) were significant predictors, though the effects were less than the control variables. Interestingly, negative attitudes about eating lunch with class were predictive of higher participation; however, more positive attitudes about food quality were predictive. If the "external" factors ( $X_1$ ,  $X_2$ , and  $X_3$ ) are ignored, one additional attitude scale (nutrition education) was a negative predictor of average daily participation.

Do teachers' attitudes toward the school lunch program influence participation and do they have more far reaching effects? Results of this study have shown that there is a significant relationship between some attitudes of teachers and student participation. Participation is not the only measurement of this relationship, however, and further research is needed to investigate other effects of teachers' attitudes on nutrition, nutrition education, and the school lunch program; e.g., student food selection and consumption at school or at home. Identifying teachers' attitudes toward the school lunch program has implications for foodservice management and can assist in the development of nutrition education programs.

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## APPENDIXES

APPENDIX A  
Attitude Instrument

## SCHOOL FOODSERVICE STUDY

Please answer all questions. We want your candid responses.

## I. GENERAL INFORMATION.

Please check the appropriate response for each item.

## 1. Number of years you have taught elementary school.

- ☐ 1. Less than 1 year
- ☐ 2. 1-5 years
- ☐ 3. 6-10 years
- ☐ 4. 11-20 years
- ☐ 5. Over 20 years

## 2. How many years have you been employed in your present position?

- ☐ 1. Less than 1 year
- ☐ 2. 1-5 years
- ☐ 3. 6-10 years
- ☐ 4. Over 10 years

## 3. Please indicate your age group.

- ☐ 1. 20-25 years
- ☐ 2. 26-30 years
- ☐ 3. 31-40 years
- ☐ 4. 41-50 years
- ☐ 5. Over 50 years

## 4. Do you have any children?

- ☐ 1. Yes
- ☐ 2. No

## 5. If your answer to question #4 was yes, how many are currently in elementary school?

- ☐ 1. One
- ☐ 2. Two
- ☐ 3. Three
- ☐ 4. Four or more
- ☐ 5. None

## 6. How often do you eat in the school lunch program?

- ☐ 1. Twice a week or more
- ☐ 2. Once a week
- ☐ 3. Once a month
- ☐ 4. Never
- ☐ 5. Other: \_\_\_\_\_

## 7. Enrollment in your class: \_\_\_\_\_ students.

## 8. Number of bussed students: \_\_\_\_\_ students.

## 9. Number of students with working mothers: \_\_\_\_\_ students.

II. Do you agree or disagree with these statements? Indicate your opinion by writing the number of your response, using the following scale:

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

There are no right or wrong answers--only how much you agree or disagree with the statement.

- |  |  |
|--|--|
| _____ 1. Children leave about the same amount of food at school as they do at home.                              | _____ 19. The cafeteria is too crowded during the lunch period.  |
| _____ 2. Teachers and administrators have a favorable attitude toward the school lunch program.                  | _____ 20. Parent involvement (e.g. open house, visitation at meals, advisory committees) would improve students' attitude toward school lunch. |
| _____ 3. There should be free lunches for all students regardless of family income.                              | _____ 21. Popular foods are not served regularly enough.   |
| _____ 4. School lunch provides a nutritionally adequate meal for teachers.                                       | _____ 22. New service styles (e.g. box lunch, buffet) would increase participation in the school lunch program.                                |
| _____ 5. Student participation in the school lunch program would increase if teachers ate with their students.   | _____ 23. Sanitation in the school foodservice is good.  |
| _____ 6. Developing favorable attitudes toward food is more important than teaching facts about nutrition.       | _____ 24. It is easier to influence eating habits of younger, rather than older, children.   |
| _____ 7. The school lunch program personnel are qualified for their jobs.  | _____ 25. Special event luncheons are a good idea (e.g. Thanksgiving luncheon).  |
| _____ 8. The students are rushed when eating lunch.  | _____ 26. There is greater plate waste when students are preoccupied with other activities.  |
| _____ 9. The portion sizes for teachers are too small.   | _____ 27. Cold foods (salads, canned fruits, etc.) are served cold.  |
| _____ 10. A nutritionist on the school staff would be a valuable resource person for nutrition education.        | _____ 28. It is an enjoyable experience for me to eat school lunch.  |
| _____ 11. Free or reduced priced meals should be provided for students from low income families.                 | _____ 29. Smaller lunchroom tables would improve the atmosphere of the school lunch program.   |
| _____ 12. The caloric level of the school lunch is too high for teacher's needs.                                 | _____ 30. Other class periods should be shortened in order to lengthen the lunch period.   |
| _____ 13. Heated trays would improve the acceptance of the food served in school.                                | _____ 31. The cost of the school lunch is too high for teachers.   |
| _____ 14. Children develop better eating habits if they are offered a wide variety of foods.                     | _____ 32. School lunch provides a nutritionally adequate diet for students.  |
| _____ 15. The lunch period should be lengthened.   | _____ 33. School lunch is appetizing and appealing.  |
| _____ 16. Hot foods (meats, vegetables, etc.) are served hot in the school lunch program.                        | _____ 34. The amount of food left uneaten on students trays is excessive.  |
| _____ 17. A separate dining area would improve the school lunch program.   | _____ 35. The quality of food (flavor, texture, variety) in the school lunch is good.  |
| _____ 18. The utensils (trays, flatware, etc.) used in the school lunch program are adequate for students needs. | _____ 36. School lunch employees have a favorable attitude toward their job.   |
|  | _____ 37. Student participation in menu planning would result in less plate waste.   |
|  | _____ 38. Students have to wait too long in the school lunch line.   |

Scale:

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

- |   |  |
|---|--|
| _____ 39. Effective nutrition education can be achieved through cooperation of school lunch personnel and teachers.       | _____ 47. Nutrition information is more meaningful if it is integrated into other subjects, rather than being taught as a separate unit. |
| _____ 40. Students are not familiar with many foods served on the school lunch menu.                                      | _____ 48. Family style service would improve the school lunch program.   |
| _____ 41. The portion sizes for students are too small.   | _____ 49. A longer lunch period is desirable even if it means lengthening the school day slightly.                                       |
| _____ 42. Seating capacity and size of the lunchroom are adequate.  | _____ 50. The main reason for plate waste is the children's dislike of the food served.  |
| _____ 43. A greater choice of menu items is needed in the school lunch (e.g. salad plate, sandwich plate, entree choice). | _____ 51. Teachers would participate in the school lunch program more often if the noise level were reduced.                             |
| _____ 44. The price of the school lunch is too high for students.   | _____ 52. A greater emphasis on nutrition education is needed in the school curriculum.  |
| _____ 45. Teachers should eat with their classes.   | _____ 53. Students would eat better if they could take their trays to their classrooms.  |
| _____ 46. The food served in the school lunch has an attractive appearance.   |  |

III. Please complete the following two items:

1. How do you react to each of the following as influences on student participation in the school lunch program? Rate each response according to this scale:
  1. Not at all important
  2. Not very important
  3. Of moderate importance
  4. Very important
  5. Extremely important

In eating lunch at school, students have an opportunity to:

- \_\_\_\_\_ a) make friends.
- \_\_\_\_\_ b) learn good table manners.
- \_\_\_\_\_ c) buy nourishing food.
- \_\_\_\_\_ d) have a hot meal.
- \_\_\_\_\_ e) learn good eating habits.
- \_\_\_\_\_ f) learn to enjoy new menu items.
- \_\_\_\_\_ g) learn about the food habits of others.
- \_\_\_\_\_ h) put nutrition knowledge into practice.
- \_\_\_\_\_ i) relax.
- \_\_\_\_\_ j) buy a meal at moderate cost.
- \_\_\_\_\_ k) be served quickly.
- \_\_\_\_\_ l) eat in a pleasant atmosphere.

2. How do you react to each of the following as influences on teacher participation in the school lunch program? Rate each of the responses using this scale:

1. Definitely an influence
2. Probably an influence
3. May not be an influence
4. Definitely not an influence

Teachers would participate in the lunch program more often if:

- \_\_\_\_\_ a) more of the other teachers did.
- \_\_\_\_\_ b) prices were lower.
- \_\_\_\_\_ c) portions were increased.
- \_\_\_\_\_ d) greater variety was offered.
- \_\_\_\_\_ e) the quality of the food improved.
- \_\_\_\_\_ f) the lunch period was longer.
- \_\_\_\_\_ g) foods served were lower in calories.
- \_\_\_\_\_ h) specials (e.g. salad plates) were featured daily.

#### IV. COMMENTS

Please comment on other aspects of the school foodservice not covered by the questionnaire. Also, we are interested in your comments related to any of the issues raised by the questions.

Please return as soon as possible in the stamped envelope provided.

THANK YOU!

APPENDIX B  
Correspondence



2031 Poyntz  
Manhattan, Kansas 66502  
Phone 913 537-2400

September 21, 1978

Dear Manhattan Teacher:

In September of 1977, the federal legislature passed a bill, P.L. 95-166, that entitles every school participating in the National School Lunch Program to receive \$0.50 per child to be used for nutrition education. One of the requirements for receiving this money is a needs assessment in four areas, one of which is an assessment of the needs and opinions of teachers.

In order to fulfill this requirement for USD #383, we have obtained the services of Karen Perkins, a graduate student at Kansas State University. She has developed the enclosed questionnaire and will administer and analyze data from this survey as partial fulfillment for college credit. Responses will be confidential and only composite scores will be returned to the district.

This survey is being conducted under guidelines established by Kansas State University. By cooperating, you will help provide answers to important questions; however, your participation is strictly voluntary. Your return of the questionnaire will indicate your willingness to participate in the survey.

If you have questions or concerns other than those reflected in this instrument, please feel free to write your comments on the questionnaire. When you have completed the questionnaire, please place it in the enclosed stamped envelope and drop it in the mail. This should take only about 20 minutes of your time--will you please return it to Kansas State by the end of the week? Input from each of our teachers is necessary to help determine the future direction of child nutrition programs for the district and the state.

Sincerely,

*Sue Greig R.D.*

Sue Greig, R.D.  
Director of Food Services  
USD #383

Karen Perkins, R.D.  
Kansas State University

Faith Roach, Ph.D., R.D.  
Department of Dietetics, Restaurant  
and Institutional Management



Department of Dietetics, Restaurant  
and Institutional Management  
Justin Hall  
Manhattan, Kansas 66506  
Phone: 913 532-5521-2

October 6, 1978

Dear Manhattan Teacher:

We need your help! Two weeks ago you were sent a questionnaire asking your opinion about the school lunch program. For the study to yield valid results, we need responses from all Manhattan teachers.

In the event you did not receive the questionnaire, let me briefly restate the purpose of this study. In September of 1977, the federal legislature passed a bill, P.L. 95-166, that entitles every school participating in the National School Lunch Program to receive \$0.50 per child to be used for nutrition education. One of the requirements for receiving this money is a needs assessment in four areas, one of which is an assessment of the needs and opinions of teachers. As indicated earlier, all information is completely confidential and only composite scores will be returned to the district.

Enclosed is another questionnaire, if it is needed. When you have completed the questionnaire, please place it in the enclosed stamped envelope and drop it in the mail. Thank you for your time and cooperation.

Sincerely,

Karen Perkins

APPENDIX C  
Participation Form



## APPENDIX D

Item scores for attitude scales

Item scores for attitude scales<sup>1</sup>

Attitude Scale	Item No.
I. <u>Teachers' attitude toward school lunch program</u>	2*,28*
II. <u>Teachers' attitude toward eating with class</u>	5*,45*,53*
III. <u>Nutrition education</u>	6*,10*,14*,24*,39*,47*,52*
IV. <u>Merchandising the school lunch</u>	20*,21,22*,25*,43*,48*
V. <u>Lunchroom environment</u>	19,23*,42*
VI. <u>Making improvements in lunchroom environment</u>	17*,29*,51*
VII. <u>Plate waste in school lunch program</u>	1*,26*,34,37*,50
VIII. <u>Food quality</u>	13*,16*,27*,33*,35*,46*
IX. <u>Teachers' meal</u>	4*,9,12,31
X. <u>Students' meal</u>	18*,32*,40,41,44
XI. <u>Length of lunch</u>	8,15*,30*,38,49*
XII. <u>School foodservice employees</u>	7*,36*
XIII. <u>Free and reduced price lunches</u>	3*,11*
XIV. <u>In eating lunch at school, students have opportunity to:</u>	a,b,c,d,e,f,g,h,i,j,k,l

<sup>1</sup>Response categories were:

1. Strongly agree
2. Agree
3. Disagree
4. Strongly disagree

Items marked with \* were reversed scored in computation of attitude scale scores

APPENDIX E  
Supplemental Table

Table 14 F ratios for two way analysis of covariance

Item No.	Level ADP <sup>1</sup>	Grade Level <sup>2</sup>	Interaction of ADP and Grade Level	Covariates <sup>3</sup>		
				PBS	PWM	PFR
1	.99	.19	2.77	.38	.66	1.59
2	.59	2.97	.35	.14	1.69	.11
3	.14	.01	.19	.95	.43	.00
4	2.47	.15	.69	.22	.65	3.72
5	3.94*	1.08	.59	1.38	1.01	1.24
6	.64	.34	.20	.77	.16	.02
7	.38	1.68	1.21	1.51	.03	.15
8	4.74*	.01	.08	3.27	.04	.00
9	.52	.30	.50	.34	.20	.24
10	.29	.98	.01	.62	.03	.30
11	.85	.09	3.80*	.72	1.04	.33
12	1.58	.46	4.56*	1.35	.88	2.29
13	6.20**	.00	7.08**	.13	5.62*	.93
14	2.33	2.30	1.32	2.88	.56	1.52
15	.80	.02	.55	.78	.13	.98
16	.74	.05	1.32	.002	.002	2.88
17	1.41	.32	1.31	.95	.18	.13
18	.02	.11	1.19	.03	1.23	.11
19	1.19	.00	.26	.84	.12	.05
20	.47	1.35	.20	.00	.01	1.57
21	6.23**	3.27	3.03*	1.16	.35	.54
22	.38	1.42	.57	3.57	.32	2.57
23	.61	1.21	.15	.05	.38	.04
24	1.34	3.29	.05	.27	.04	.21
25	.96	1.69	2.73	.02	.42	.01
26	.64	.72	4.50*	1.56	.00	.13
27	.47	.04	.04	1.67	.90	1.73
28	2.07	4.16*	1.47	.02	.26	1.38
29	1.07	.28	.72	.09	.00	1.53
30	.19	4.98*	.24	.63	.01	1.44
31	.62	.03	1.28	.57	.06	.14
32	2.12	.44	1.96	.03	.10	.11
33	1.74	2.16	.40	.13	.14	.50

<sup>1</sup> Teachers grouped by level of participation in school lunch of students in their classes; low (66% or below), medium (67-79%), high (80%+)

<sup>2</sup> Teachers grouped by grade level; lower elementary (grades 1-4), upper elementary (grades 5, 6)

<sup>3</sup> PBS = % bus students; PWM = % working mothers; PFR = % free and reduced price meals

\*P  $\leq$  .05, \*\*P  $\leq$  .01

Table 14 (cont.)

Item No.	Level ADP	Grade Level	Interaction of ADP and Grade Level	Covariates		
				PBS	PWM	PFR
34	.79	2.00	.79	.69	1.15	.16
35	1.07	1.49	1.16	.56	.14	.14
36	.79	.21	.08	.49	.02	.00
37	.08	3.31	1.46	1.48	1.87	.27
38	1.53	.48	2.23	1.05	1.04	.45
39	2.42	3.53	1.59	.95	.36	.02
40	.34	1.55	.15	.10	.21	.04
41	.07	1.36	.04	1.59	.19	.93
42	.28	.01	.85	.13	.02	.48
43	.30	.25	.70	1.77	.00	2.22
44	.68	.00	.68	.16	2.26	.07
45	1.54	.59	1.37	.06	.25	1.19
46	.76	.49	.33	.01	.76	.00
47	.72	.82	.13	.71	1.12	.01
48	2.73	2.57	.15	.90	.12	.69
49	1.23	5.40*	.31	2.01	2.12	.32
50	.49	.03	.35	1.69	1.82	.08
51	.94	.54	.18	2.03	.02	.06
52	.90	.62	.38	.07	.26	.07
53	1.83	.29	.14	.00	6.34**	6.90**



INFLUENCE OF TEACHERS' ATTITUDE TOWARD THE SCHOOL  
LUNCH PROGRAM ON STUDENT PARTICIPATION

by

KAREN L. PERKINS

B.S., Kansas State University, 1975

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AN ABSTRACT OF A MASTER'S THESIS

submitted in partial fulfillment of the

requirements for the degree

MASTER OF SCIENCE

Department of Dietetics, Restaurant  
and Institutional Management

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1979

#### ABSTRACT

The nutritional goal of the school lunch is to furnish one-third of the Recommended Daily Dietary Allowances of the National Research Council for children of various ages. Because of the demonstrated effect of the school lunch program on the improved dietary intake of children, student participation in the program is encouraged.

Little information is available on the attitudes of elementary teachers toward the school lunch program. This study assessed the attitudes of elementary school teachers toward the school lunch program, studied the influence of teacher activities on student participation, and considered other factors which could influence participation.

The study was conducted at seven elementary schools in a medium-sized midwestern city. Phase I of the study assessed teachers' attitudes toward the school lunch program. An attitude instrument was mailed to 98 elementary teachers, and 83 (85%) completed instruments were returned. Phase II involved the collection of student participation data by class at each school.

The largest percentage of the respondents were between 26 and 50 years of age, had taught six to 20 years, and had been employed in their present position one to ten years. Class size ranged from 14-33 students. In approximately 80 percent of the classes, 40 percent or more of the students had mothers who were employed outside the home. In only 18 percent of the classes were more than 70 percent of the students bussed. Only 10 percent of the classes had less than 50 percent participation in

the program. In 70 percent of the classes less than 25 percent of the students received free meals and less than 5 percent received reduced price lunches.

Results indicated attitude differences between upper and lower grade teachers. Average daily participation was predominantly a function of the percentage of bussed students and the percentage of students receiving free or reduced priced meals. Level of participation in the school lunch program was also found to be related to attitude response. A significant relationship was found between participation and teachers' attitudes toward eating with their class, food quality, and nutrition education. Further research is needed to investigate the reasons for these differences.